

CLAIMS

1. A method for analyzing an object comprising:
prescanning the object using a multiple energy X-ray device to determine
5 information indicative of effective atomic number characteristics of the object; and
conducting scans of areas of interest of the object with a computed tomography
device based upon the information.

2. The method of claim 1 further comprising transmitting the information to a
10 processor coupled to the computed tomography device.

3. The method of claim 2, further comprising:
performing a metal artifact correction based on the information.

15 4. The method of claim 3, wherein performing a metal artifact correction
includes performing a beam hardening correction.

20 5. The method of claim 3, wherein performing a metal artifact correction
includes performing a scatter correction.

6. The method of claim 1, further comprising:
using the information to determine density characteristics of the object.

25 7. The method of claim 1, further comprising:
using the information to determine a plane of the object to be scanned.

8. A method for analyzing an object comprising:
prescanning the item using a multiple energy X-ray device to determine prescan
information;
30 transmitting the prescan information to a processor coupled to a computed
tomography device;

20200909 16:54:59

performing a computed tomography scan of a plane of the object based on the prescan information; and

performing a metal artifact correction on the computed tomography scan based on the prescan information if the plane intersects an area including or near a metal object.

5

9. The method of claim 8, wherein the processor is located within the computed tomography device.

10. An apparatus for analyzing an object comprising:
10 a multiple energy prescanner that prescans the object; and
a computed tomography device that scans only areas of interest of the object based on information determined in the prescan .

11. The apparatus of claim 10, wherein the multiple energy prescanner has a
15 high energy X-ray source and a low energy X-ray source.

12. The apparatus of claim 10, further comprising a conveyor for transporting the item from the multiple energy prescanner to the computed tomography device.

13. The apparatus of claim 10, wherein the computed tomography device is a
20 multiple energy computed tomography device.

14. An apparatus for analyzing an object comprising:
a multiple energy prescanner; and
25 a computed tomography device;
wherein information indicative of at least one metal artifact is transmitted from the multiple energy prescanner to the computed tomography device.

15. A method for analyzing an object comprising:
30 prescanning the object to determine first information about the object;
performing a computed tomography scan of the item to determine second information about the object; and

10066459.020602

analyzing the second information to determine whether to update the first information.

16. The method of claim 15 wherein the prescanning is performed before
5 performing the computed tomography scan.

17. The method of claim 15 wherein the first information relates to mass information about the object.

10 18. The method of claim 17 wherein the second information relates to density information about at least one plane of the object.

19. The method of claim 15 wherein the prescan information relates to an effective atomic number of the object.
15

20. A method for analyzing contents of an item comprising acts of:
prescanning the item using an X-ray device to determine first information indicative of a location of a target object;
performing a computed tomography scan of a plane intersecting the target object
20 to determine second information indicative of density characteristics of the target object;
and
transmitting the second information to a processor to determine whether to modify the first information.

25 21. The method of claim 20 wherein the act of transmitting includes transmitting the second information to a processor within the X-ray device.

22. An apparatus for analyzing an object, the apparatus comprising:
an X-ray device that prescans the object; and
30 a computed tomography device that scans selected areas of the object;
wherein information indicative of density characteristics of the object are transmitted from the computed tomography device to the X-ray device.

20200519.020602

23. The apparatus of claim 22, wherein the X-ray device includes a processor.

24. The apparatus of claim 22, wherein the X-ray device has a high energy X-ray
5 source and a low energy X-ray source.

25. The apparatus of claim 22, further comprising a conveyor for transporting the
item between the X-ray device and the computed tomography device.

10 26. The apparatus of claim 22, wherein the computed tomography device is a
multiple energy computed tomography device.

27. An apparatus for analyzing an object comprising:
an X-ray device to determine first information about the object;
15 a computed tomography device to scan a plane of the object based on the first
information to determine second information; and
a processor that analyzes the first and second information to determine whether to
update the first information based on the second information.

20 28. A method comprising:
prescanning an item using a multiple energy X-ray device to determine first
information;
transmitting the first information to a computed tomography device;
performing a computed tomography scan on a plane of the item using the
25 computed tomography device based on the first information to determine second
information; and
transmitting the second information to the multiple energy X-ray device.

29. The method of claim 28 wherein performing includes performing a computed
30 tomography scan using a multiple energy computed tomography device.

10063459.026602

30. The method of claim 28, wherein transmitting the first information to a computed tomography device includes transmitting information indicative of effective atomic number characteristics of the item.

5 31. The method of claim 28, wherein transmitting the second information to the multiple energy X-ray device includes transmitting information indicative of density characteristics of the item.

10 32. An apparatus that analyzes contents of an object comprising:
a multiple energy X-ray device that prescans the object to determine first information;
a computed tomography device, coupled to the X-ray device, that performs a scan on at least one plane of the object based on the first information to determine second information; and
15 a processor that analyzes the first and second information to determine whether to update the first information based on the second information.

200020" 65489001